DIRECTIONS

FOR USING THE

MACHINE,

FOR COPYING

LETTERS AND OTHER WRITINGS.

INVENTED AND MADE BY

JAMES WATT and COMPANY,

OF

BIRMINGHAM.

MDCCLXXX.

£25

1607/2172


BRITISH MUSEUM
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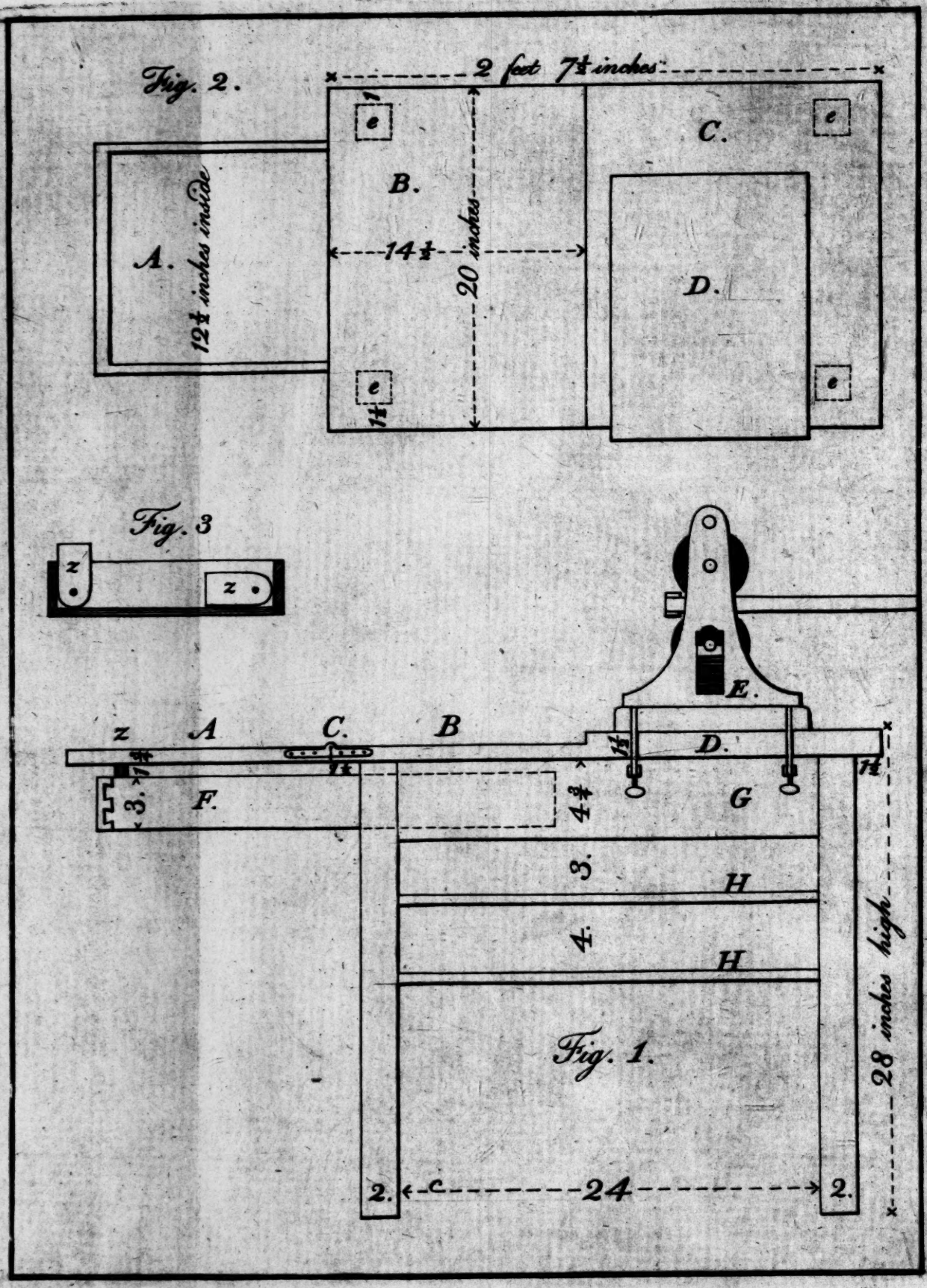
Fig. 2.
2 feet 7½ inches
A.
12½ inches inside
B.
14½
20 inches
C.
D.
e
1
1½
Fig. 3
z
Fig. 1.
E.
F.
G
H
3.
4.
2.
24
28 inches high
1½
4¾

Explanation of the Engraving of the Stand for the Copying Machine.

Fig. 1. Is an elevation of the ſtand with the machine (E) fixed upon it.

The ſtand conſiſts of a table with one drawer (F) for the copying paper, and two open ſhelves (H H) for the drying and wetting books, and ſpare paſteboards, &c. The top of the table is divided into two parts; on the right hand part (D) the machine is fixed by its cramps: the left hand part is double when the table is not in uſe, as the leaf **A** folds down upon **B**, by the joint **C**. When the table is to be uſed the drawer F muſt be pulled out, and two ſmall props, which turn upon centres, fixed to the inſide of the front of the drawers, one of which is ſhown under **Z**, muſt be raiſed up to ſupport the leaf (A).

The ſhelves (H H) are preferable to drawers for the wetting and drying books, becauſe theſe books imbibe a great deal of moiſture when in uſe; and would rot if ſhut up in a cloſe place: and for the ſame reaſon the preſſing weight of the drying book ſhould not be laid upon it, except when it is uſed to flatten the copies.

Fig. 2. Is a plan or view of the table from above.

A, The drawer. *B* The folding leaf. *C* The fixed part. *D* the place of the pedeſtal of the machine. *eeee* The places of the feet.

The dimenſions of the ſeveral parts in inches are marked upon them; and the whole is drawn to a ſcale of an inch to the foot.

Fig. 3. Is a view of the inſide of the front of the drawer, to ſhew the two props *z z*, one of which is turned down to ſhew the poſition they muſt be in when the drawer is ſhut.

Since this engraving was made it has been found convenient to make the ſhelves to draw out like thoſe of

of a wardrobe. To make the diſtance between the upper ſhelf and the frame of the table 4 inches, and between the upper and under ſhelf only 3 inches, ſo that the drying book and its weights may lie in the upper ſhelf, to which a wire lettice front, with a lock, may be adjuſted, that the copies in the drying book may be kept ſecret, if choſen. The diſtance between the feet may be made 25 or 26 inches, to make more room in the ſhelves: and when the table is made of mahogany, the feet need only be an inch and a half ſquare inſtead of two inches, which is intended for deal tables.

As the leaves of tables which lie upon one another, are apt to warp, we have contrived a kind of hinges which will permit them either to turn up or hang down, at pleaſure. And as ſome gentlemen do not like to have the trouble of wetting their copying paper always when they have occaſion to copy a letter, boxes lined with block-tin are lately contrived, in which the paper may be kept in the proper degree of moiſture for many days. They are of two ſizes, viz. for quarto and folio poſt paper, and will be made to any other ſizes which are deſired.

GENTLEMEN who uſe this Method of Copying Letters are requeſted to be particularly attentive to the following Articles.

1. *That the writing paper be ſuch as bears out the ink well.*
2. *To be very careful to abſorb the water from the copying paper, ſo that it may not be too moiſt when uſed, otherwiſe both the copy and the original will be diffuſed.*
3. *Not to neglect paſſing the original writing through the preſs between dry ſponge papers after it has been copied, or to dry it by a fire if they have an opportunity, otherwiſe the moiſture left in the paper will cauſe the writing to ſink through it.*

To put the copy into the drying book as ſoon as it is taken, and to put the preſſing weight upon it.

DIRECTIONS

FOR USING THE

COPYING-MACHINE.

I. THE Rolling Preſs is contained in the box (A), the lid of which is faſtened on by ſcrews. Having taken off the lid, you will perceive that the preſs is held faſt in its place by means of four pieces of wood which are ſcrewed to the ſides of the box. The heads of the ſcrews are on the outſide of the box. Having unſcrewed them, take out the preſs, taking hold of it by the ſmall iron bar at top. Place the preſs upon the table or ſtand appointed for it, and if the table be of an oblong form, place the preſs near the right end of it.

II. In the box (B) you will find the board of the preſs lapped up with its cloth, paſteboards, and oiled papers, placed in their proper order for uſe: that is, a thin paſteboard next the board; ſecondly, an oiled paper; thirdly, two quarto ſheets of writing paper, folded up with copying paper in the order they ſhould be in when you intend to paſs them through the preſs, in order to copy the writing. Theſe ſheets are put in to ſerve as examples of the

 method

method of diſpoſing the thin paper, when more pages than one are to be copied at the ſame time. Fourthly, a piece of oiled paper, which is always to be placed above the uppermoſt piece of copying paper. Fifthly, a thin paſteboard, and laſtly, the cloth, which goes next the roll.

III. The board is thinned a little at one end, and has a piece of wood, called a clamp, faſtened acroſs the other end; the thin end is to allow it to enter more eaſily between the rolls. A piece of wood is fixt between the rolls to keep them faſt during carriage, which you are now to remove by turning the upper roll round by the lever, which you will find in the box (B). But previous to making any exertion of this kind, you are to faſten the preſs to the table by means of the cramps; alſo, contained in box (B). Place theſe cramps in two ſlits, which are made for them in the pedeſtal of the preſs, and ſcrew up their ſcrews until they take faſt hold of the table and preſs.

IV. To enter the board between the rolls, take out the undermoſt paſteboard, the ſhort oiled paper, and the writing paper, and lay the long oiled paper, the long paſteboard and the cloth on the board, ſo that they lie paralel to its ſides, and that one end of them be placed at the lines drawn on the board, and marked for them, reſpectively; then apply the thin end of the board to the interſtice between the rolls, and upon the left hand ſide of the rolls. Support the board horrizontally with your *left* hand, holding it ſquare to the rolls, in the middle between the two ſides of the frame, and puſh it forwards, at the ſame time preſs on the left hand end of the lever forcibly with

with your *right* hand, and the board will enter; paſs it backward and forward a few times, by turning the upper roll with the lever, (this ſerves to level the cloth) and the preſs will be ready for uſe.

It is neceſſary to obſerve, while you move the board backward and forward, whether its edge keeps, during the whole motion, at equal diſtances from the ends of the rolls, or from the ſides of the frame: If it does, it is a mark that you have entered it ſquare; but if it does not, you muſt take the board out again, and enter it ſo that it may not rub in any part of its motion on the ſides of the frame, but keep always at equal diſtances from it.

It ſometimes happens that after a few times uſing the machine, the board, though put in ſquare at firſt, gradually works itſelf to one end of the rolls, and rubs upon the frame, in which caſe it muſt be taken out and properly entered again. When this happens very frequently, it is cauſed by there being too few ſprings in the end towards which it works itſelf; or by the writings which are to be copied being generally laid nearer one ſide of the board than the other. At the ſame time it muſt be obſerved that it ſeems impoſſible to obtain ſo much preciſion in the adjuſtment of the preſs as totally to prevent this circumſtance; and we have not been able to find out any other means which would anſwer that end; yet when tolerably adjuſted, the machine will take many copies without its being neceſſary to take out the board; and the trouble of doing this is ſo very trifling that it ſcarcely deſerves to be reckoned ſuch. Many Gentlemen chuſe to take out the board every time

time they ceaſe to uſe the machine, that the ſprings may fully unbend themſelves and thereby retain their elaſticity longer.

V. Having the writing which is to be copied, ready and dry; if it is written only on one page, cut a piece of the thin or copying paper to the ſize of the page; open the wetting book near the right hand ſide, lay the thin paper flat on the right hand page of this book. Having put ſome clear water in a glaſs tumbler, wet the bruſh in it, ſtroke it on the edge of the glaſs to take off part of the water, then holding the thin paper faſt, begin at one end and wet it all over thoroughly with the bruſh. When it is every where ſoaked through with the water, ſhut the wetting book, and preſs the wet paper pretty hard by rubbing your hand over the cover above the place where the wet paper lies. Open the book at the place and examine if all ſuperfluous moiſture be abſorbed by the book from the paper; and if you perceive any part that ſtill remains very wet and ſhining, the laſt operation muſt be repeated on that part.

The operation of wetting the paper is that which requires the greateſt nicety of any in this buſineſs. The copying paper ſhould be made equally *moiſt* all over, without being any where what may be called *wet;* in the latter caſe it would certainly make the writing ſpread, and ſtrike through the writing paper. As it is exceeding difficult to fix a rule for this article, it is adviſable for beginners to leave the paper rather too *dry* than too *moiſt*.

VI. Lay the ſhort paſteboard on the table near the wetting book, lay the writing upon it, and the thin

thin moiſtened paper on the face of the writing, carry the whole to the preſs, and lifting up the cloth, the paſteboard and oiled paper, place upon the board the ſhort paſteboard with the writing and moiſtened paper, taking care that the latter lie quite flat on the writing, and be without any wrinkles. Then lay down the oiled paper, long paſteboard and cloth upon it, and immediately, by means of the lever, put the upper roll in motion, by which the writing, &c. will paſs through between the rolls from the right to the left. When you perceive that you have turned the upper roll far enough, (that is to ſay, when you find that the writing has paſt the roll) then, by changing the motion, make the board move from the left to the right until it has regained its firſt place, and the clamps on the board are cloſe to the rolls.

Lift up the cloth, the long paſteboard, and oiled paper, and remove the writing with its copy, which you will find attached to it; take the copy off gently, but quickly, leaſt it ſtick faſt to the writing; open the drying book and lay the copy flat in it, ſhut the book and lay the preſſing weight upon it, leave it there till it is dry, when you will find it quite flat and free from wrinkles.

If you lay an oiled paper above the copying paper, before you remove it from the table to the preſs, to take the impreſſion, it will prevent the copying paper from being diſordered or ruſled in the removal; and ſuch oiled paper may be run through the preſs along with it.

VII. *The copy paper communicates moiſture to the original writing, and ſometimes makes it appear*

pear a little puckered; if you want to have it quite flat again, lay under it a piece of the white ſponge paper ſent with the preſs, and another piece above it, and paſs it through the preſs, which will flatten it, and make it nearly dry. This operation ought never to be omitted, but is moſt neceſſary when the original has been wrote on both ſides of the paper, and conſequently has had a piece of moiſt copy paper applied to each ſide of it.

When many letters are copied, it is found convenient to hang them upon a line ſtretched acroſs the room, ſo that one may dry while you are copying another; and when all are done, and *nearly* dry, to run them, one or two at a time, through the preſs with the ſponge papers: And it is neceſſary to remark, that if paper be made *quite dry*, by the fire or ſun, they will pucker; and if run through the preſs in that dry and puckered ſtate, they will contract wrinkles, which will not happen if a little damp.

VIII. When the copy which you laid in the drying book is quite dry, it ought to be taken out and fixt in the letter book where your copies are to be preſerved. This book ſhould be made of a paper rather larger than the ſize you commonly write upon; (for poſt paper letters a printing demy paper anſwers very well.) The paper ſhould not be thick as it will have the addition of the copying paper on each page of it. Lay the copy in the letter book, with the reverſe ſide upwards, then if it be a quarto page, take four of the paper wafers, ſent you, wet them one by one, and lay one on each corner of

of the copy, then turn it upſide down, and faſten it in its place by means of the wafers. If the copy conſiſts of two quarto pages in one piece, or of one folio page, you muſt uſe ſix wafers to faſten it on. As moſt people have ſometimes occaſion to write letters on folio paper, it will be found beſt to have the copy book folio ſize, in which, either folio copies or quarto ones may be conveniently diſpoſed; and you ought to appriſe your ſtationer that the book ſhould be bound very looſe in the back, otherwiſe it will not ſhut properly, when there are many copies in it.

Common book-binders flour-paſte, or the mucilage of gum tragacanth, may be uſed inſtead of the wafers to faſten the copies into the letter book. The latter has the advantage of keeping longer without moulding, than the former. The proportion is a quarter of an ounce of pounded gum tragacanth, and three ounce meaſures of *boiling* water, to ſtand 24 hours in a warm place, then to be ſqueezed through a thin linen rag, and to be kept in a ſmall covered veſſel, ſuch as an earthen muſtard-pot. Gum arabic does not anſwer ſo well as gum tragacanth. When you uſe the paſte or gum, touch only the corner of the paper with it.

IX. When the letter to be copied conſiſts of two pages in quarto, take a half ſheet of the copying paper, and having moiſtened it, as directed, lay it out flat on the ſhort oiled paper, then lay above it one of the pages to be copied, with its face downwards, and its margin cloſe to one end of the copying paper, raiſe up the other end of the copying paper,

and

and turn it over the end of the original, ſo that it may cover the uppermoſt page of the writing, which will then have one quarter ſheet of the copying paper under it, and the other over it. Place the whole on the board of the preſs, ſo that the long oiled paper may lie immediately above the uppermoſt page of the copying paper, and the ſhort oiled paper immediately under the loweſt page; paſs it through the preſs, and proceed afterwards as has been directed. Or you may fold the ſhort folio oiled paper in quarto, and having opened it again, lay the half ſheet of copying paper upon it, and having laid one of the pages of the letter on one quarto page of the copying paper, fold the other page of the copying paper, and alſo of the oiled paper, over upon the page of the writing which then lies uppermoſt, by which means you will prevent the copying paper from being ruffled in the removal.

Pleaſe to obſerve, as a general rule, that in every caſe, one of the oiled papers ſhould be next the moiſt copying paper.

X. If the letter to be copied conſiſts of three quarto pages, moiſten a quarter ſheet of copying paper, and turn down one leaf of the wetting book upon it; on that leaf lay a half ſheet of the thin paper, moiſten it, then ſhut the book and abſorb the ſuperfluous moiſture from the copying paper, by paſſing the hand over the cover of the book, as has been directed. Lay the letter to be copied on the ſhort oiled paper, with the ſide, which has the two pages written on it, uppermoſt; ſpread the half ſheet of moiſtened paper on it, take a quarto

piece

piece of oiled paper, lay it above one of the pages and fold the ſheet ſo that the other written page may be uppermoſt; upon that page ſpread the quarter ſheet of moiſt copying paper, diſpoſe the whole in the middle of the ſhort paſteboard, lay it on the board of the preſs under the long oiled paper, and paſs it through the rolls, &c.

XI. When letters are written in folio, on more pages than one, you are to take as many half ſheets of copying paper as there are pages, and moiſten them in ſo many leaves of the damping book. Then ſuppoſing there are four pages, ſpread one half ſheet on the ſhort oiled paper, lay the laſt page of the letter upon the moiſt paper, ſpread another half ſheet of the copy paper on the third page of the letter, cover that with the ſpare ſhort folio oiled paper, on which lay another half ſheet of the copying paper, and turn over the firſt leaf of the writing, by which means the ſecond page will lie upon the third moiſtened paper. In the ſame manner cover the firſt page of the writing with its half ſheet of copying paper, and place the whole on the board of the preſs, and proceed as before directed.

XII. When the copies are freſh taken they appear pale, but in twenty-four hours or leſs, they will become of a good dark blackiſh colour, if well taken, and from good ink. When the copy ſeems ſtronger in ſome places than in others, and ſeems diffuſed in theſe ſtrong places, it is a mark that ſuch ſtrong places have been made too *wet*, or have not been properly dried off. If upon the contrary, the copy ſeems too faint, and the impreſſion of ſome words

imperfectly taken, it ſhows that the copying paper was not moiſt enough, or that the writing had lain too long after it was written before it was copied; or, laſtly, that the preſs was not ſet ſo as to ſqueeze hard enough; which latter fault may be remedied by putting in another ſpring at the bottom at each end of the lower roll. The goodneſs of a copy cannot be judged of until it has been twenty-four hours made, and even then it will, ſometimes, have a kind of indiſtinctneſs about the edges of the letter, which will afterwards leave it.

XIII. Much of the goodneſs and durability of a copy, and even of the original itſelf, conſiſts in the ink uſed; and as no article is prepared in ſo many various ways, the greater part of which are unfit for producing good ink, we find ourſelves under an obligation of preparing ink and ink powder, in a proper manner; of which we ſhall only ſay at preſent, *That our ink is prepared of the beſt ingredients, properly proportioned to one another, and in as great a quantity as can be ſuſpended in the liquid, without giving thickneſs, or tenacity.* The ink powder we prepare will be found to be almoſt perfectly ſoluble in water; and the ink made with it will be fit for uſe in a few hours.

XIV. It is neceſſary to obſerve here, that all ink is hurt by ſtanding in open veſſels; by being kept in metallic veſſels of any kind; by being frozen, and by being heated to the heat of boiling water. There are many other circumſtances that tend to ſpoil ink, which it would be tedious to enumerate here. We ſhall only remark that ink *newly* made

made, gives a better copy than *older* ink ; and that *ink which ſtands any long time in an open veſſel, becomes unfit for copying*. We therefore recommend the new-invented fountain ink pots, with a conical tunnel in the middle, (made by Meſſrs. WEDGEWOOD and BENTLEY) which, by leaving only a ſmall ſurface expoſed to the air, preſerve the ink in good condition, and the earthen ware, of which they are made, is one of the beſt ſubſtances known for preſerving ink. Such as do not write much, ought to uſe a ſmall ink pot, and to have it waſhed out frequently, and thereby they may often enjoy the pleaſure of writing with freſh thin ink. It is proper to mention, that if ink is much moulded, the writing made with it will not keep its colour.

XV. In chooſing writing paper, care ſhould be taken to have it well ſized, or ſuch as carries out the ink well ; for if it ſucks any part of it up, you cannot expect a good copy. Beſides, the damp of the copying paper will ſtrike the writing through ſuch bad paper, to its great deformity ; all which may be avoided by buying well ſized, good paper ; which, beſides the trial by writing, may be known by dipping a ſheet of it in water ; when, if it is badly ſized, it will ſoon become tranſparent in ſpots, which good paper will not do.

XVI. The date at which a writing will yield a copy is extremely uncertain ; from the weather, as it is more or leſs drying, and from the ſtate of the Ink. In general, it will do to the end of twenty-four hours, and ſome times of three or four days ; but

we

we adviſe the copying the letters as ſoon after they are written as may prove convenient.

XVII. It has been mentioned, that the goodneſs of the copy depends partly on the tightneſs of the preſs: It is impoſſible to give any accurate rule to determine how tight it ſhould be; we can only obſerve, that *if the operator can turn the preſs with tolerable eaſe, it is not too tight;* and that it will ſeldom err on that ſide. If it ſhould prove a little too ſlack, it may be remedied by ſlipping in another ſpring under the lowermoſt one on each ſide, with their curvature parallel to thoſe above them, ſo that they may lie in contact with them. But if the preſs be much too ſlack, the freſh put in ſprings ought to have their curvature placed contrary to the curvature of theſe which are then lowermoſt in the preſs, that is, convexity to convexity, or concavity to concavity. The ſprings can be only put in or taken out at the bottom of the ſlit that contains them, which is made dovetail wiſe, to keep them in their place, excepting a ſhort part at the bottom.

XVIII. The preſs ſhould not be placed too near a fire, nor where the direct rays of the ſun can fall upon it; as in either of theſe caſes the rolls will be ſubject to ſplit. Care ſhould be taken that no hard uneven ſubſtances be ſuffered to paſs through the rolls, as they will make marks in them, nor too much thickneſs of any other ſubſtance leaſt you break the ſprings. A few drops of oil ſhould be applied to the axis of the rolls, from time to time; to facilitate which application, there are ſmall ſlits in the braſſes under the axis of the upper roll.

To

To prevent duſt from hurting the cloth or rolls, and to prevent, in good meaſure, the rolls from being injured by the ſun or fire, it is proper to have a ſlight leather cover, ſuch as is uſed for harpſichords, fitted to the preſs and board.

XIX. If the preſs ſhould be uſed for the purpoſe of printing with copper plates, it would be right to have a board made for that purpoſe, leaſt the plates make marks in the board uſed for taking copies of writing, which ſhould be kept for that uſe only. When you print copper plates, you are not to uſe the paſteboards nor oiled papers, but inſtead of them, three thickneſſes of ſoft cloth.

N. B. When you leave off working, the rolls ſhould be turned until the clamps on the board come into contact with them; becauſe, if the rolls remain on the paſteboard, the continued preſſure of the ſprings will make a mark there which will ſpoil your future copies.

CONTENTS.

FINIS.

DIRECTIONS for USING *the* *DAMPING-BOXES.*

LAY one of the pieces of ſponge-paper (which are ſent in the boxes) in the *Wetting-book*, and wet it with clear ſpring water by means of the bruſh. When it is thoroughly wetted, turn over one leaf of the book upon it. On that leaf, lay the ſecond piece of ſponge-paper, and wet it in the ſame manner: Then ſhut the book, and preſs with your hand on the cover, that the ſuperfluous moiſture may be abſorbed.

Take the Sponge-papers thus properly damped out of the wetting-book, and lay them both in the bottom of the damping-box, to which they belong. Then pour upon them, three quarters of an ounce weight of clear water, taking care to diſtribute it as equally as you can, all over the ſponge-papers, which will abſorb it and become very wet.

When you perceive that the water has diffuſed itſelf equally over the ſponge-paper, take twelve half ſheets of the copying-paper, for the folio damping-box, or twenty-four quarter ſheets, for the quarto damping-box; roll this paper round a wooden ruler, in the ſame manner as you would roll up a ſcroll of paper; then, having unrolled it, apply the other end of the paper to the ruler, and roll it up in the contrary direction. This operation ſerves to part or looſen the ſheets from one another. The paper is to be then laid flat into the box upon the ſponge-

paper.

paper, and the lid of the box put on, but not preſſed. Let the whole ſtand thus twelve hours, and in that time the moiſture will have penetrated and diffuſed itſelf equally through the copying-paper, and made it of the proper degree of dampneſs for uſe. The paper will appear undulated, or waved; but no inconvenience will thence ariſe in the uſe of it, as the preſs will flatten it in the operation of copying. Nevertheleſs, if you chooſe to have it flat before you uſe it, lift the whole copying paper out of the box, and lay it on the lower oiled paper, which is placed on the board of the preſs; lay another oiled paper above it, and paſs it *once* through the preſs, and (without returning it) lift it from the board on the oppoſite ſide of the rollers. Then lay it again in the box, cover it with the lid, and keep it for uſe.

When you want to take out a leaf of the paper, in order to copy a piece of writing, wet the point of your finger, apply it to one corner of the leaf, which will thereby ſtick to it, and ſo give you an opportunity of taking better hold of the paper, in order to raiſe it and lay it on the writing.

Be careful in lifting off the lid, to raiſe it firſt by one end, and to do it gently, otherwiſe ſome of the paper may ſtick to the lid, and be rumpled. And when you have taken the lid off, either lay it on the table upſide down, or reſt one end or ſide of it on the ledge of the box, leſt if it were laid down flat on the table, its moiſt ſide might take up ſome duſt, or loſe the moiſture that adheres to it.

When

When you have taken out the paper wanted, cover the box immediately, to prevent the ſtock of paper in the box from drying.

Paper may be thus preſerved in its proper degree of moiſture for receiving copies from two to four weeks: And if the water uſed has been very pure, it will not be ſubject to acquire the ſmell of damp paper in that time.

The quantity therefore of paper to be damped at once will in ſome meaſure depend on the greater or leſs conſumption; and the quantity of water uſed ought to be always in proportion to the quantity of paper. And as it is material that this proportion of water ſhould be accurately obſerved, a phial is ſent along with the boxes, on the ſide of which a line is marked with a file, to ſerve as a meaſure, and to ſave the trouble of weighing the water. The quantity of water contained in the phial when filled to the line, is three quarters of an ounce, and as is mentioned above, is ſufficient for twelve half ſheets for the folio ſize, or twenty-four quarter ſheets for the quarto ſize. When twice this quantity of paper is to be damped, twice that quantity of water is to be uſed, and ſo on in proportion to larger or leſſer quantities of paper. But it is to be obſerved, that when the number of leaves to be put into either box exceeds thirty ſix, the moiſture does not equally pervade the whole quantity of paper

When you have uſed your ſtock of damped paper, before you put in more to replace it, you ought to obſerve that the ſponge-paper in the bottom be always

of

of the proper degree of moiſture; But if your conſumption of damp-paper be pretty quick, you will not have occaſion to wet the ſponge-paper in the wetting-book every time.